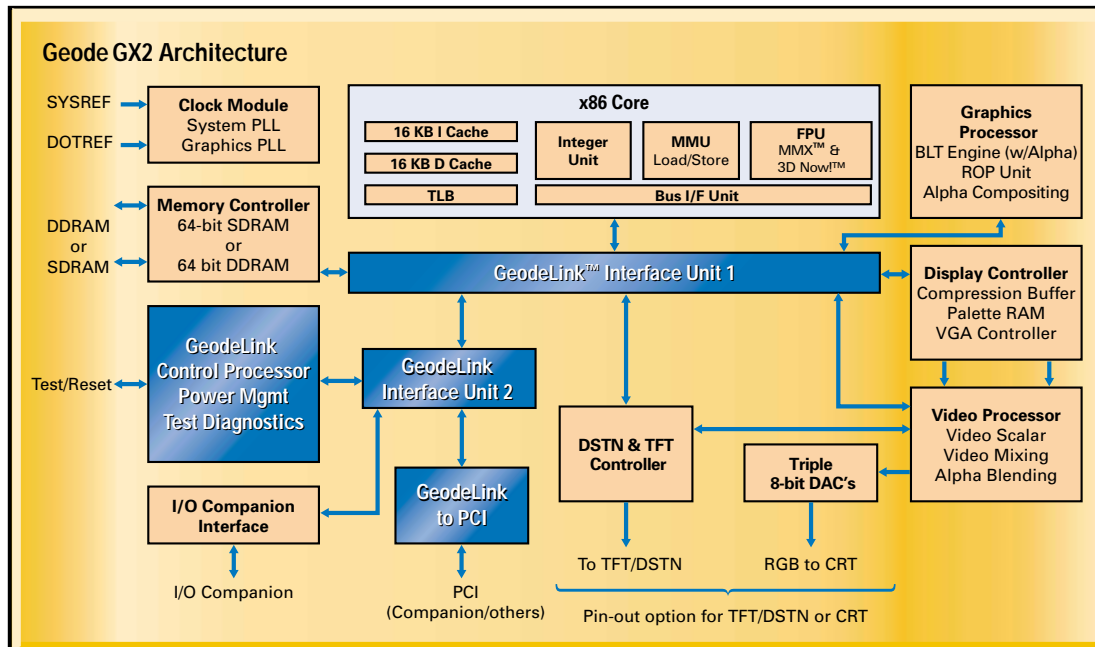


Geode™ GX2 Integrated Processor

For Information Appliances



Integrated Processor

Target Applications

Today's and tomorrow's information appliances have an increased need for multimedia applications. Geode GX2 offers the perfect balance between power and performance at the right price point, to enable new and exciting information appliances in the following categories:

- Interactive digital set-top box
- Personal Access Device (PAD)
- Residential Gateway
- Thin Client

For more information about National's total systems solutions for the information appliances market, visit ia.national.com.

Introduction

The National Semiconductor Geode™ GX2 processor is the newest member of National's integrated x86 processor family. Specifically designed from the ground-up for information appliances, Geode GX2 delivers optimal performance for full-featured multimedia applications across broadband connections.

The Geode GX2 includes a powerful 32-bit-x86 core, a display controller with up to 1600 by 1200 resolution, a graphic processor, a memory controller (SDRAM or DDR SDRAM), a TFT and DSTN interface and integrated DACs for CRT support.

Product Overview

Together with its companion, the Geode GX2 delivers the perfect balance between power dissipation and performance. The Geode GX2 is powered by a new x86 core with support for MMX™ and 3D Now!™ extensions. Built around National's GeodeLink™ architecture with on-chip bandwidth of up to 6 GB/s Geode GX2 supports high-quality multimedia applications.

Main Components

- x86 CPU with integrated graphics
- Integrated DACs
- High-performance GeodeLink architecture
- PCI-66 interface (up to 3 masters)
- ACPI and APM compliant
- 200 - 400 MHz processor speed
- < 1W typical power dissipation
- 368 EBCA (CRT or TFT pin-out)
- 0.15μ - 1.0V process

Technical Specifications

Outstanding Features

- 32-bit low-power x86 processor with support for MMX and 3D Now! extensions
- 32 KB of split level 1 cache, 16 KB instructions, and 16 KB data cache
- Powerful GeodeLink™ architecture
- Integrated video DACs and integrated TFT and DSTN interface for flexible output options: CRT or DSTN/TFT
- Integrated display controller
 - Supports up to:
 - 1600 x 1200 x 16 bpp @ 85 Hz
 - or 1280 x 1024 x 24 bpp @ 85 Hz
- 64-bit SDR and DDR memory controller
 - up to 133 MHz for SDR and 266 MHz for DDR
- Integrated thermal diode
- Optimized Unified Memory Architecture (UMA) with patented compression technology

Companion Overview

- Based on GeodeLink technology
- PCI 66 MHz and PCI 33 MHz
- Real Time Clock (RTC)
- Integrated boot pre-loader
- Integrated peripherals
 - USB 1.1 (2 x 2 ports)
 - ATA 66
 - LPC bus
 - AC '97 DMA audio
 - 16 GPIO (muxed)
 - 1 UART
 - Infrared
 - ACCESS.bus® (Similar to I²C)
 - Flash support (LPC based and NAND/NOR)

Powerful Architecture

- High bandwidth interface unit that can handle up to 6 GB/s of data transfer
- Built-in Active Hardware Power Management (AHPM) for instant power savings
- Support for prioritization of accesses from real-time and isochronous devices
- Pipelining of multiple read and/or write requests from various devices (up to 31 pipelined transactions)
- GeodeLink virtual PCI headers
- Standard bus interface for modular reusable IP
- Standard bridges to legacy buses (Xbus PCI)
- Peer to peer communication
- Suspend clocks and power controls
- Standard test and scan interface
- Standard diagnostic signals
- On-chip logic analyzer functions
- Full scan for debug
- Error reporting for debug
- GeodeLink virtual PCI headers

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